

RESL CUSTOMER EXPORT CONTROL AGREEMENT

It is the Radiological and Environmental Sciences Laboratory's (RESL) policy to conduct business in accordance with all applicable U.S. export control laws and regulations. It is also RESL's policy that its Customers comply with U.S. export control laws and regulations. Therefore, Customer agrees to the following:

1. Because products, technical data, and technical assistance (i.e., services) provided to Customer by RESL may be subject to U.S. export control laws and regulations, (i) transactions with certain persons and companies and (ii) the export or reexport of certain types and levels of products, technical data, and services are prohibited or restricted.
2. Customer acknowledges that it is responsible for its own compliance with U.S. export control laws and regulations. Customer further agrees that it assumes the responsibility to obtain all necessary U.S. export licenses or other U.S. governmental authorizations, as well as all liability for the failure to do so.
3. Customer acknowledges that export control requirements may change and that the export or reexport of RESL products, technical data, and services without an export license or other appropriate governmental authorization may result in criminal and/or civil liability.
4. The obligations and requirements described herein shall survive the expiration or termination of any agreement or contract between RESL and Customer.

GrF33 Participating Laboratories

Lab Code	Lab Name	Matrix Code
ADEM01	Alabama Department of Environmental Management	GrF
ADFC99	Abu Dhabi Quality and Conformity Council-Central Testing Lab	GrF
AFOH01	USAFSAM/OEA	GrF
ANTE01	ALS Environmental - Fort Collins, CO	GrF
ARGO01	Idaho National Laboratory	GrF
ARPL01	Analytical Support Operations - Radiochemical Processing Lab	GrF
ARSL01	ARS International, LLC	GrF
ASUK99	NAS Radiochemistry Group	GrF
AY1201	Consolidated Nuclear Security, LLC, Analytical Chemistry Organization Laboratory	GrF
CDHS01	California Department of Public Health	GrF
CESL01	Lawrence Livermore National Laboratory - EMRL	GrF
CHMH01	222-S Laboratory	GrF
CMRC01	Carlsbad Environmental Monitoring and Research Center	GrF
CRCE99	Centre for Radiation, Chemical and Environmental Hazards	GrF
DEHS01	Department of Environmental Health & Safety	GrF
DINL99	Departamento Ingeniería Nuclear y Mecánica de Fluidos	GrF
DPHE01	Colorado Dept. of Public Health & Env. / Laboratory Services Div.	GrF
ELCS01	Energy Labs - College Station	GrF
ELIW01	Energy Laboratories, Inc.	GrF
ERCL01	Washington State Public Health Laboratories	GrF
EULC01	EnergySolutions, LLC	GrF
FDHE01	Florida Dept of Health Environmental Laboratory	GrF
FDOH01	Florida Dept. of Health, Mobile Environmental Radiological Lab	GrF
GENE01	GEL Laboratories, LLC	GrF
GPCL01	Georgia Power Company Environmental Laboratory	GrF
HECR01	SC Dept. Health and Environmental Control Radiological Laboratory	GrF
HERR01	Washington Closure Hanford	GrF
HPAL01	Los Alamos National Laboratory	GrF
ISUP01	ISU - Department of Physics/Health Physics/EAL	GrF
JAEC99	Research Laboratories and Information Directorate	GrF
KSCF01	Kennedy Space Center, HP Laboratory	GrF
LAEC99	Lebanese Atomic Energy Commission - Environmental Radiation	GrF
LDRA99	Laboratori de Radiologia Ambiental-Universitat de Barcelona	GrF
LERL99	LARUEX Environmental Radioactivity Laboratory	GrF
LGCL99	LGC Ltd	GrF
LOCK03	Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory	GrF
MAHP59	Materials Assessment and Health Physics Group	GrF
MART03	Radioactive Material Analysis Laboratory	GrF
NARL02	USEPA - NAREL - MERL	GrF
NESI01	B&W Technical Services-Radioisotope & Analytical Chemistry Laboratory	GrF
NJDH01	New Jersey Dept. of Health, PHEL, ECLS	GrF
NOCS99	National Oceanography Centre, Southampton	GrF
NRLL99	Environmental Radioactivity - National Centre for Radiation Science	GrF
ODHL01	Ohio Department of Health Laboratory	GrF
ORIS01	ORISE/IEAV	GrF
OTLI01	Outreach Laboratory, a Division of ESC Lab Sciences	GrF
QUAN01	TestAmerica St. Louis	GrF

QUAN03	TestAmerica Laboratories - Richland	GrF
RAVR99	Radiactividad Ambiental y Vigilancia Radiologica	GrF
RPSC01	Radiation Protection Service	GrF
SANC99	RadioAnalysis, South Africa Nuclear Energy Corp.	GrF
SEML01	SRS Environmental Monitoring Laboratory	GrF
SOUT01	Southwest Research Institute	GrF
SRPD01	Sandia National Laboratories, Radiation Protection Sample Diagnostics	GrF
TDHL01	Texas Department of State Health Services Laboratory	GrF
TELE01	TELEDYNE BROWN ENGINEERING - ENVIRONMENTAL SERVICES	GrF
TELE02	ATI Environmental, Inc., Midwest Lab	GrF
TMAO01	EBERLINE SERVICES OAK RIDGE LABORATORY	GrF
TNUT01	St. Louis USACE FUSRAP Laboratory	GrF
UPVL99	Lab Radiactividad Ambiental. Univ. Politecnica Valencia	GrF
URSL01	UNLV Radioanalytical Services Laboratory	GrF
USED99	National Center for Nuclear Energy, Sciences and Techniques	GrF
WEST04	PACE ANALYTICAL SERVICES, PITTSBURGH	GrF
WIPP01	WIPP Laboratories	GrF
WSHL01	Wisconsin State Laboratory of Hygiene	GrF
WSTP99	Cavendish Nuclear Limited	GrF
WVDP01	WVDP Environmental Laboratory	GrF
WVPL01	WVDP Radiation Protection Lab	GrF
ZIOS99	ZVD Institute of Occupational Safety	GrF

Laboratories Not Reporting GrF33

Lab Code	Lab Name	Matrix Code
DRMG01	CNS Pantex - D&RMG	GrF
FMEC99	Foods and Water Laboratories Center	GrF
HCAL01	Lawrence Livermore National Laboratory	GrF
KDHE01	Kansas Dept. of Health & Environment	GrF
MDPH01	MDPH-Radiation Control Program	GrF
NARL01	National Analytical Radiation Environmental Laboratory	GrF
NCNS99	Mansour OUESLATI - Radioanalytical Laboratory	GrF
RSAL01	RSA Laboratories, Inc.	GrF

Study Reference Values

MAPEP-15-GrF33

Radiological Reference Date: 08/01/2015

Analyte	Ref Value	Ref Unc
Radiological	Units: (Bq/sample)	
Gross alpha	0.90	0.03
Gross beta	1.56	0.05

Sample Statistical Summary

MAPEP-15-GrF33

Radiological Reference Date: 08/01/2015

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological						Units: (Bq/sample)	
Gross alpha	68	56	0.70	0.26	0.90	0.03	0.27 - 1.53
Gross beta	69	67	1.52	0.19	1.56	0.05	0.78 - 2.34

Note: (1) T = Total number of laboratories reporting analyte.
 (2) A = Number of laboratories with 'Acceptable' performance.
 (3) Mean excludes values derived as total metals and values indicated as "Not Acceptable".

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Flag Summary Report

MAPEP-15-GrF33

Radiological

Analyte	A	W	RW	N
Gross alpha	56			12
Gross beta	67			2



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ADEM01) Alabama Department of Environmental Management

Montgomery Laboratory

Montgomery, AL 36110

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.0922	0.90	N		-89.8	0.27 - 1.53	0.0001	N
Gross beta	0.4218	1.56	N		-73.0	0.78 - 2.34	0.0001	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

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- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ADFC99) Abu Dhabi Quality and Conformity Council-Central Testing Lab

Radiation Lab

Abu Dhabi, - -

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.84	0.90	A		-6.7	0.27 - 1.53	0.3 N
Gross beta	1.25	1.56	A		-19.9	0.78 - 2.34	0.32 W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(AFOH01) USAFSAM/OEA

2510 Fifth Street, Area B

Wright-Patterson AFB, OH 45433-7913

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.71	0.90	A		-21.1	0.27 - 1.53	0.11 W
Gross beta	1.74	1.56	A		11.5	0.78 - 2.34	0.10 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ANTE01) ALS Environmental - Fort Collins, CO

225 Commerce Drive

Fort Collins, CO 80524-1416

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.602	0.90	A		-33.1	0.27 - 1.53	0.054 A
Gross beta	1.26	1.56	A		-19.2	0.78 - 2.34	0.10 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ARGO01) Idaho National Laboratory

INL, Materials and Fuels Complex

Idaho Falls, ID 83415

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.89	0.90	A		-1.1	0.27 - 1.53	0.17 W
Gross beta	1.37	1.56	A		-12.2	0.78 - 2.34	0.27 W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

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- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ARPL01) Analytical Support Operations - Radiochemical Processing Lab

PO Box 999

Richland, WA 99354

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.215	0.90	N		-76.1	0.27 - 1.53	0.022	A
Gross beta	1.34	1.56	A		-14.1	0.78 - 2.34	0.045	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

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Gross Beta Flags:

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Uncertainty Flags:

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- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

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Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ARSL01) ARS International, LLC

2609 North River Road

Port Allen, LA 70767

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.300	0.90	A		-66.7	0.27 - 1.53	0.039 A
Gross beta	1.54	1.56	A		-1.3	0.78 - 2.34	0.190 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

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Gross Beta Flags:

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Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ASUK99) NAS Radiochemistry Group

A38.1 AWE,

Reading, Berkshire RG7 4PR

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	1.091	0.90	A		21.2	0.27 - 1.53	0.038	A
Gross beta	1.919	1.56	A		23.0	0.78 - 2.34	0.022	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

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Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(AY1201) Consolidated Nuclear Security, LLC, Analytical Chemistry Organization Laboratory
Y12, NSC, Bldg. 9995, Rm 142
Oak Ridge, TN 37831-8189

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.938	0.90	A		4.2	0.27 - 1.53	0.065	A
Gross beta	1.77	1.56	A		13.5	0.78 - 2.34	0.078	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

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Gross Beta Flags:

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Uncertainty Flags:

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Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33
 (CDHS01) California Department of Public Health
 Drinking Water & Radiation Lab.
 Richmond, CA 94804-6403

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.307	0.90	A		-65.9	0.27 - 1.53	0.0143	A
Gross beta	1.57	1.56	A		0.6	0.78 - 2.34	0.0183	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

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Uncertainty Flags:

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- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

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Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(CESL01) Lawrence Livermore National Laboratory - EMRL

7000 East Avenue

Livermore, CA 94551

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	2.49E-01	0.90	N		-72.3	0.27 - 1.53	2.69E-03	N
Gross beta	1.82E+00	1.56	A		16.7	0.78 - 2.34	6.08E-03	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

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A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(CHMH01) 222-S Laboratory

2355 Stevens Drive

Richland, WA 99354

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	7.287E-01	0.90	A		-19.0	0.27 - 1.53	7.56E-02	A
Gross beta	1.178E+00	1.56	A		-24.5	0.78 - 2.34	6.70E-02	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(CMRC01) Carlsbad Environmental Monitoring and Research Center

1400 University Dr.

Carlsbad, NM 88220

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.751	0.90	A		-16.6	0.27 - 1.53	0.018 A
Gross beta	1.64	1.56	A		5.1	0.78 - 2.34	0.15 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(CRCE99) Centre for Radiation, Chemical and Environmental Hazards

Public Health England

Didcot, OXON OX11 0RQ

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.41	0.90	A		-54.4	0.27 - 1.53	0.02 A
Gross beta	2.05	1.56	A		31.4	0.78 - 2.34	0.11 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(DEHS01) Department of Environmental Health & Safety

North Carolina State Univ.

Raleigh, NC 27695-8007

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.84	0.90	A		-6.7	0.27 - 1.53	0.04 A
Gross beta	1.40	1.56	A		-10.3	0.78 - 2.34	0.06 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(DINL99) Departamento Ingeniería Nuclear y Mecánica de Fluidos

Alameda de Urquijo s/n

Bilbao, Vizcaya 48013

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Flag
Gross alpha	1.11	0.90	A		23.3	0.27 - 1.53	0.044 A
Gross beta	1.56	1.56	A		0.0	0.78 - 2.34	0.041 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(DPHE01) Colorado Dept. of Public Health & Env. / Laboratory Services Div.

8100 Lowry Blvd

Denver, CO 80230

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.44	0.90	A		-51.1	0.27 - 1.53	0.04 A
Gross beta	1.45	1.56	A		-7.1	0.78 - 2.34	0.04 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ELCS01) Energy Labs - College Station

415 Graham RD

College Station, Tx 77845

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	1.13	0.90	A		25.6	0.27 - 1.53	0.18 W
Gross beta	1.58	1.56	A		1.3	0.78 - 2.34	0.06 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ELIW01) Energy Laboratories, Inc.

2393 Salt Creek HWY

Casper, Wy 82601

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.71	0.90	A		-21.1	0.27 - 1.53	.18 W
Gross beta	1.2	1.56	A		-23.1	0.78 - 2.34	.18 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ERCL01) Washington State Public Health Laboratories

1610 N.E. 150th Street

Shoreline, WA 98155-9701

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	.234	0.90	N		-74.0	0.27 - 1.53	.023	A
Gross beta	1.52	1.56	A		-2.6	0.78 - 2.34	.03	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(EULC01) EnergySolutions, LLC

I-80, Exit 49

Clive, UT 84029

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	.25925	0.90	N		-71.2	0.27 - 1.53	.04	W
Gross beta	1.6338	1.56	A		4.7	0.78 - 2.34	.3	W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(FDHE01) Florida Dept of Health Environmental Laboratory

PO Box 680069

Orlando, FL 32868-0069

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.83	0.90	A		-7.8	0.27 - 1.53	0.05 A
Gross beta	1.54	1.56	A		-1.3	0.78 - 2.34	0.07 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(FDOH01) Florida Dept. of Health, Mobile Environmental Radiological Lab

PO Box 680069

Orlando, FL 32868-0069

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.87	0.90	A		-3.3	0.27 - 1.53	0.08 A
Gross beta	1.51	1.56	A		-3.2	0.78 - 2.34	0.05 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(GENE01) GEL Laboratories, LLC

2040 Savage Road

Charleston, SC 29407

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.999	0.90	A		11.0	0.27 - 1.53	0.130 A
Gross beta	1.57	1.56	A		0.6	0.78 - 2.34	0.0591 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(GPCL01) Georgia Power Company Environmental Laboratory

2480 Maner Road

Atlanta, GA 30339

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.0890	0.90	N		-90.1	0.27 - 1.53	0.0346	N
Gross beta	1.61	1.56	A		3.2	0.78 - 2.34	0.0283	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(HECR01) SC Dept. Health and Environmental Control Radiological Laboratory
8231 Parklane Road
Columbia, SC 29223

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.247	0.90	N		-72.6	0.27 - 1.53	0.039	W
Gross beta	1.51	1.56	A		-3.2	0.78 - 2.34	0.07	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(HERR01) Washington Closure Hanford

Radiological Counting Facility

Richland, WA 99352

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	.11	0.90	N		-87.8	0.27 - 1.53	.03	W
Gross beta	1.57	1.56	A		0.6	0.78 - 2.34	.08	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33
 (HPAL01) Los Alamos National Laboratory
 Milan Gadd, MS G761
 Los Alamos, NM 87545-1663

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	.97	0.90	A		7.8	0.27 - 1.53	.09 A
Gross beta	1.6	1.56	A		2.6	0.78 - 2.34	.02 N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ISUP01) ISU - Department of Physics/Health Physics/EAL

785 S. 8th Ave, Rm 120

Pocatello, ID 83209-8106

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.43	0.90	A		-52.2	0.27 - 1.53	0.01 A
Gross beta	1.27	1.56	A		-18.6	0.78 - 2.34	0.01 N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(JAEC99) Research Laboratories and Information Directorate

Jordan Atomic Energy Commission

Amman, Jordan 70 (11934)

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.534	0.90	A		-40.7	0.27 - 1.53	0.054 A
Gross beta	1.873	1.56	A		20.1	0.78 - 2.34	0.099 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(KSCF01) Kennedy Space Center, HP Laboratory

IHA-023

Kennedy Space Center, FL 32899

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.2313	0.90	N		-74.3	0.27 - 1.53	0.0098	A
Gross beta	1.533	1.56	A		-1.7	0.78 - 2.34	0.0513	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(LAEC99) Lebanese Atomic Energy Commission - Environmental Radiation

National Council for Scientific Research

Beirut, Beirut 1107 2260

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Flag
Gross alpha	0.74	0.90	A		-17.8	0.27 - 1.53	0.06 A
Gross beta	1.41	1.56	A		-9.6	0.78 - 2.34	0.06 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(LDRA99) Laboratori de Radiologia Ambiental-Universitat de Barcelona

Facultat de Química

Barcelona, Catalunya 08028

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	26.4	0.90	N		2833.3	0.27 - 1.53	1.9	A
Gross beta	45.1	1.56	N		2791.0	0.78 - 2.34	1.6	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(LERL99) LARUEX Environmental Radioactivity Laboratory

Dpt. Applied Physics, Faculty of Vet. Sciences

Caceres, Caceres 10003

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.430	0.90	A		-52.2	0.27 - 1.53	0.056 A
Gross beta	1.26	1.56	A		-19.2	0.78 - 2.34	0.12 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(LGCL99) LGC Ltd

Queens Road

Teddington, Middlesex TW11 0LY

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.75	0.90	A		-16.7	0.27 - 1.53	0.11 A
Gross beta	1.15	1.56	A		-26.3	0.78 - 2.34	0.09 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(LOCK03) Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory

INL/Battelle Energy Alliance, LLC

Idaho Falls, ID 83415-7111

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.304	0.90	A		-66.2	0.27 - 1.53	0.022 A
Gross beta	1.70	1.56	A		9.0	0.78 - 2.34	0.08 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(MAHP59) Materials Assessment and Health Physics Group

Imperial College Reactor Centre

Ascot, Berkshire SL5 7TE

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.95	0.90	A		5.6	0.27 - 1.53	0.10 A
Gross beta	1.45	1.56	A		-7.1	0.78 - 2.34	0.12 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33
 (MART03) Radioactive Material Analysis Laboratory
 ORNL
 Oak Ridge, TN 37830

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.182	0.90	N		-79.8	0.27 - 1.53	0.023	A
Gross beta	1.47	1.56	A		-5.8	0.78 - 2.34	0.045	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(NARL02) USEPA - NAREL - MERL

540 S Morris Ave

Montgomery, AL 36115

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.246	0.90	N		-72.7	0.27 - 1.53	0.011	A
Gross beta	1.39	1.56	A		-10.9	0.78 - 2.34	0.022	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(NESI01) B&W Technical Services-Radioisotope & Analytical Chemistry Laboratory

Lynchburg Technology Center

Lynchburg, VA 24504-5447

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.600	0.90	A		-33.3	0.27 - 1.53	0.032	A
Gross beta	1.61	1.56	A		3.2	0.78 - 2.34	0.038	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(NJDH01) New Jersey Dept. of Health, PHEL, ECLS
3 Schwarzkopf Drive
West Trenton, NJ 08628

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.8954	0.90	A		-0.5	0.27 - 1.53	0.014	N
Gross beta	1.5466	1.56	A		-0.9	0.78 - 2.34	0.016	N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(NOCS99) National Oceanography Centre, Southampton

GAU-Radioanalytical

Southampton, Hampshire SO14 3ZH

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.47	0.90	A		-47.8	0.27 - 1.53	0.02 A
Gross beta	1.84	1.56	A		17.9	0.78 - 2.34	0.03 N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(NRLL99) Environmental Radioactivity - National Centre for Radiation Science

PO Box 25099

Christchurch, Christchurch 8144

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.850	0.90	A		-5.6	0.27 - 1.53	0.022	A
Gross beta	1.413	1.56	A		-9.4	0.78 - 2.34	0.029	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ODHL01) Ohio Department of Health Laboratory

8995 E Main Street

Reynoldsburg, OH 43068

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.734	0.90	A		-18.4	0.27 - 1.53	0.041 A
Gross beta	1.439	1.56	A		-7.8	0.78 - 2.34	0.021 N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ORIS01) ORISE/IEAV

PO Box 117

Oak Ridge, TN 37831-0117

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.586	0.90	A		-34.9	0.27 - 1.53	0.019 A
Gross beta	1.569	1.56	A		0.6	0.78 - 2.34	0.018 N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(OTLI01) Outreach Laboratory, a Division of ESC Lab Sciences

311 N. Aspen

Broken Arrow, OK 74012-

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.272	0.90	A		-69.8	0.27 - 1.53	0.013 A
Gross beta	1.61	1.56	A		3.2	0.78 - 2.34	0.024 N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(QUAN01) TestAmerica St. Louis

13715 Rider Trail North

Earth City, MO 63045-1205

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	1.23	0.90	A		36.7	0.27 - 1.53	0.0855 A
Gross beta	1.41	1.56	A		-9.6	0.78 - 2.34	0.0734 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(QUAN03) TestAmerica Laboratories - Richland
2800 GEORGE WASHINGTON WAY
RICHLAND, WA 99354-

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.779	0.90	A		-13.4	0.27 - 1.53	0.103	A
Gross beta	1.57	1.56	A		0.6	0.78 - 2.34	0.112	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(RAVR99) Radiactividad Ambiental y Vigilancia Radiologica

CIEMAT (Ed 70 P2 D11)

Madrid, Madrid 28040

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Flag
Gross alpha	0.624	0.90	A		-30.7	0.27 - 1.53	0.014 A
Gross beta	1.483	1.56	A		-4.9	0.78 - 2.34	0.070 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(RPSC01) Radiation Protection Service

Ontario Ministry of Labour

Weston, Ontario M9P 3T1

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	NR	0.90				0.27 - 1.53	
Gross beta	1.94	1.56	A		24.4	0.78 - 2.34	0.19 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(SANC99) RadioAnalysis, South Africa Nuclear Energy Corp.

Sample Receipt Gate 1

Pretoria, Gauteng 0001

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Flag
Gross alpha	0.283	0.90	A		-68.6	0.27 - 1.53	0.023 A
Gross beta	1.45	1.56	A		-7.1	0.78 - 2.34	0.05 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(SEML01) SRS Environmental Monitoring Laboratory

Bldg 735-B

Aiken, SC 29808

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.78	0.90	A		-13.3	0.27 - 1.53	0.079	A
Gross beta	1.61	1.56	A		3.2	0.78 - 2.34	0.057	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(SOUT01) Southwest Research Institute

6220 Culebra Rd.

San Antonio, TX 78228-0510

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	1.07	0.90	A		18.9	0.27 - 1.53	0.0752 A
Gross beta	1.57	1.56	A		0.6	0.78 - 2.34	0.0952 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(SRPD01) Sandia National Laboratories, Radiation Protection Sample Diagnostics

PO Box 5800, MS1103

Albuquerque, NM 87185-1103

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	1.109	0.90	A		23.2	0.27 - 1.53	0.015	N
Gross beta	1.417	1.56	A		-9.2	0.78 - 2.34	0.033	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(TDHL01) Texas Department of State Health Services Laboratory

1100 W 49th Street

Austin, TX 78756

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.498	0.90	A		-44.7	0.27 - 1.53	0.020 A
Gross beta	1.469	1.56	A		-5.8	0.78 - 2.34	0.025 N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(TELE01) TELEDYNE BROWN ENGINEERING - ENVIRONMENTAL SERVICES

2508 Quality Lane

Knoxville, TN 37931-6819

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.497	0.90	A		-44.8	0.27 - 1.53	0.039 A
Gross beta	1.34	1.56	A		-14.1	0.78 - 2.34	0.068 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(TELE02) ATI Environmental, Inc., Midwest Lab

700 Landwehr Road

Northbrook, IL 60062-

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.30	0.90	A		-66.7	0.27 - 1.53	0.04 A
Gross beta	1.85	1.56	A		18.6	0.78 - 2.34	0.09 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(TMAO01) EBERLINE SERVICES OAK RIDGE LABORATORY

601 SCARBORO RD

OAK RIDGE, TN 37830-

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.43	0.90	A		-52.2	0.27 - 1.53	0.025 A
Gross beta	1.525	1.56	A		-2.2	0.78 - 2.34	0.044 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33
 (TNUT01) St. Louis USACE FUSRAP Laboratory
 8945 LATTY AVE
 BERKELEY, MO 63134-

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	.3409	0.90	A		-62.1	0.27 - 1.53	.0245 A
Gross beta	1.5390	1.56	A		-1.3	0.78 - 2.34	.0432 A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(UPVL99) Lab Radiactividad Ambiental. Univ. Politecnica Valencia
CAMINO DE VERA, 14
VALENCIA, VALENCIA 46022

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.59	0.90	A		-34.4	0.27 - 1.53	0.04 A
Gross beta	1.56	1.56	A		0.0	0.78 - 2.34	0.02 N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(URSL01) UNLV Radioanalytical Services Laboratory

Campus Mail Stop 453037

Las Vegas, NV 89154-3037

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.81	0.90	A		-10.0	0.27 - 1.53	0.04	A
Gross beta	1.37	1.56	A		-12.2	0.78 - 2.34	0.07	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(USED99) National Center for Nuclear Energy, Sciences and Techniques

CNESTEN BP 1382

RABAT, RABAT RP 10001

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	1.27	0.90	A		41.1	0.27 - 1.53	0.0444	A
Gross beta	1.11	1.56	A		-28.8	0.78 - 2.34	0.0463	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(WEST04) PACE ANALYTICAL SERVICES, PITTSBURGH

1638 Roseytown Road

Greensburg, PA 15601

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.518	0.90	A		-42.4	0.27 - 1.53	0.0974 W
Gross beta	1.69	1.56	A		8.3	0.78 - 2.34	0.304 W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(WIPP01) WIPP Laboratories

1400 University Drive

Carlsbad, NM 88220

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	6.97e-01	0.90	A		-22.6	0.27 - 1.53	6.50e-02	A
Gross beta	1.31e+00	1.56	A		-16.0	0.78 - 2.34	4.48e-02	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33
 (WSHL01) Wisconsin State Laboratory of Hygiene
 2601 Agriculture Drive
 Madison, WI 53718

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.551	0.90	A		-38.8	0.27 - 1.53	0.053	A
Gross beta	1.324	1.56	A		-15.1	0.78 - 2.34	0.034	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(WSTP99) Cavendish Nuclear Limited

Greson Court

Cumbria, UK CA24 3HZ

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.88	0.90	A		-2.2	0.27 - 1.53	0.08 A
Gross beta	1.72	1.56	A		10.3	0.78 - 2.34	0.27 W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(WVDP01) WVDP Environmental Laboratory

10282 Rock Springs Road

West Valley, NY 14171

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Flag
Gross alpha	0.594	0.90	A		-34.0	0.27 - 1.53	0.0473 A
Gross beta	1.48	1.56	A		-5.1	0.78 - 2.34	0.0194 N

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33
 (WVPL01) WVDP Radiation Protection Lab
 10282 Rock Springs Rd
 West Valley, NY 14171

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.889	0.90	A		-1.2	0.27 - 1.53	0.0562	A
Gross beta	1.5253	1.56	A		-2.2	0.78 - 2.34	0.0323	A

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-15-GrF33

(ZIOS99) ZVD Institute of Occupational Safety

Chengdujska Cesta 25

Ljubljana-Polje, Slovenia SI-1260

Radiological						Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value Unc Flag
Gross alpha	0.57	0.90	A		-36.7	0.27 - 1.53	0.13 W
Gross beta	1.54	1.56	A		-1.3	0.78 - 2.34	0.32 W

Radiological Reference Date: August 1, 2015

Gross Alpha Flags:

A = Result acceptable, Bias $\leq \pm 70\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 70\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

Gross Beta Flags:

A = Result acceptable, Bias $\leq \pm 50\%$ with a statistically positive result at two standard deviations (Result/Uncertainty > 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, does not include zero).

N = Result not acceptable, Bias $> \pm 50\%$ or the reported result is not statistically positive at two standard deviations (Result/Uncertainty ≤ 2 , i.e., the range encompassing the result, plus or minus the total uncertainty at two standard deviations, includes zero).

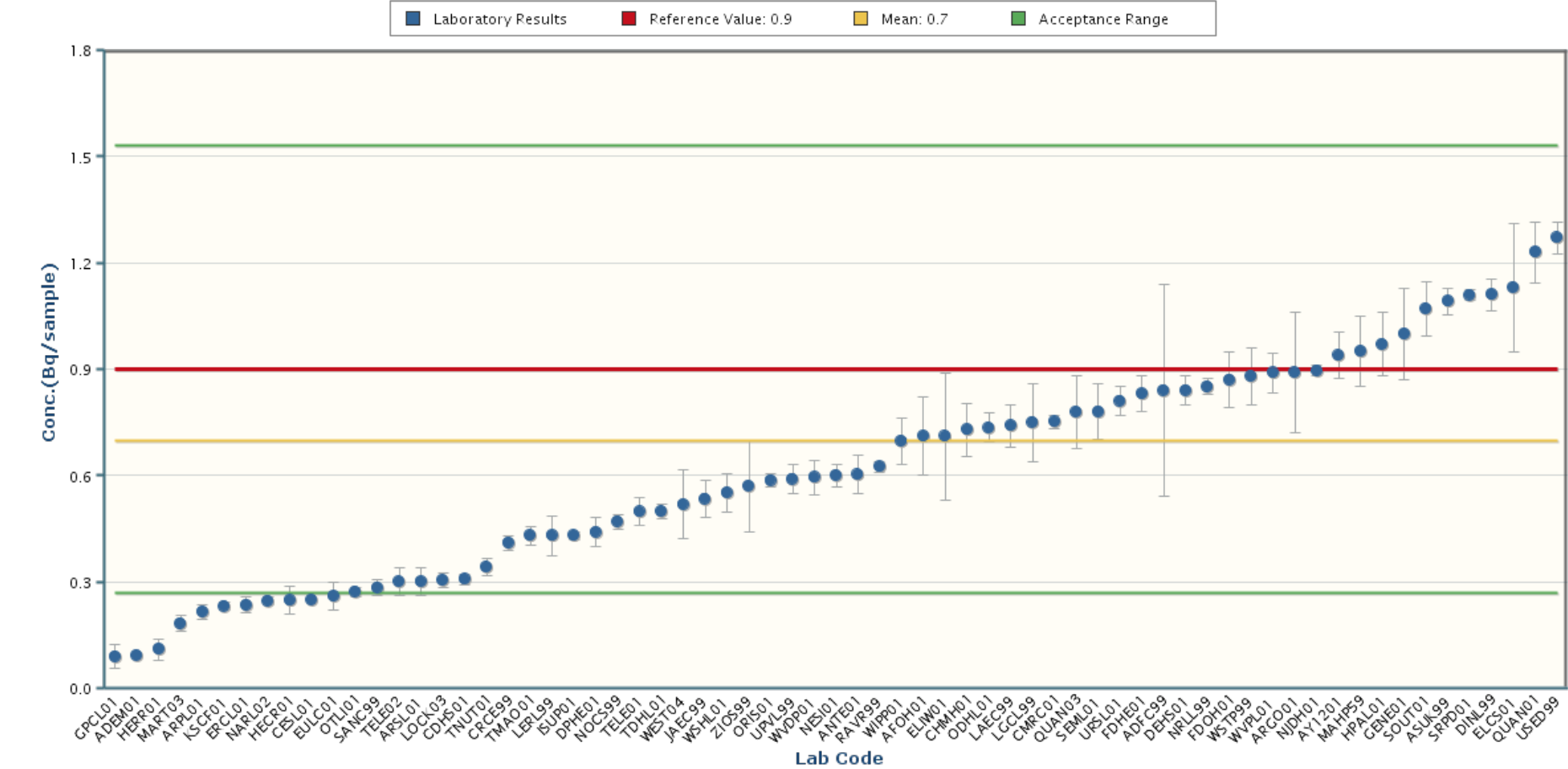
Uncertainty Flags:

- 1) NOT ACCEPTABLE.....RP<2%
- 2) ACCEPTABLE.....2% \leq RP \leq 15%
- 3) ACCEPTABLE WITH WARNING.....15%<RP \leq 30%
- 4) NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Gross alpha

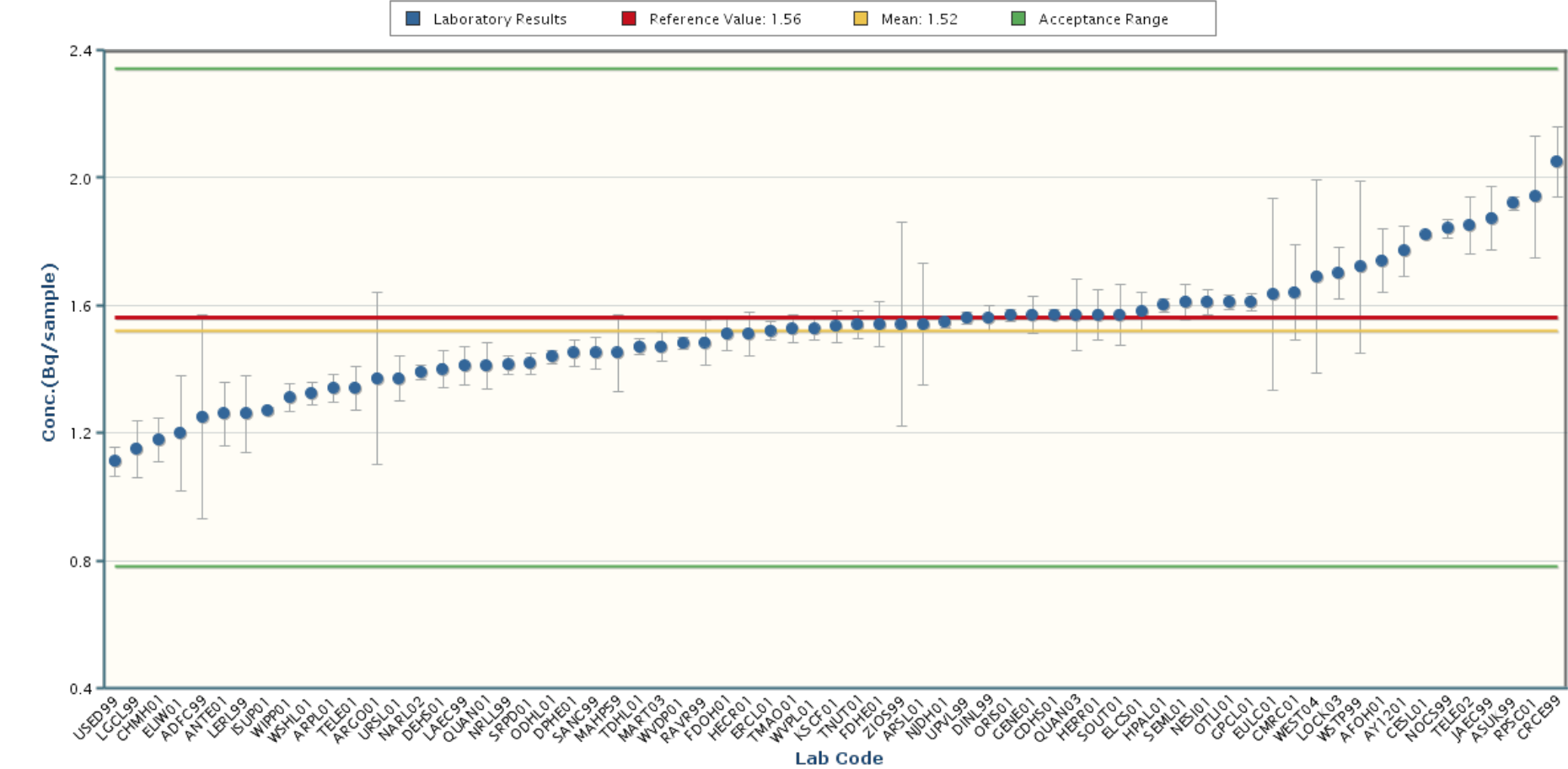
MAPEP-15-GrF33



Notes:
The chart shows only data points with values between -0.61 and 2.01 (± 5 Standard Deviations).

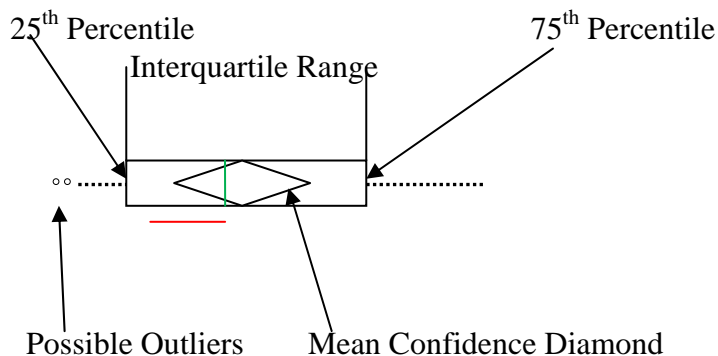
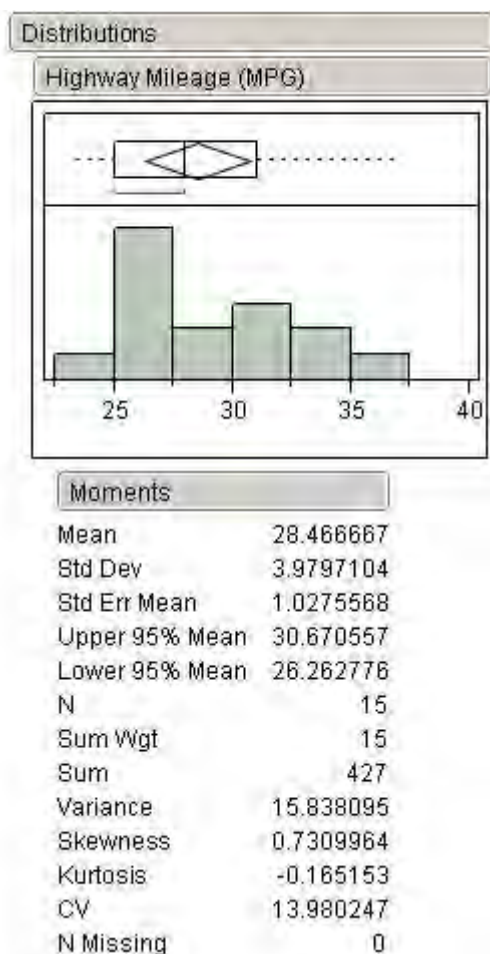
Gross beta

MAPEP-15-GrF33



Notes:
The chart shows only data points with values between 0.56 and 2.48 (± 5 Standard Deviations).

The intent of the distribution graphs contained within this report is to graphically demonstrate to users how % Bias data within the current MAPEP Series appears when examined by matrix, by analyte, by method of sample preparation or by method of detection. The data points (small 'dots') plot the bias (or z-score for organic constituents) of each of the analytes in each of the matrices. The BLACK small vertical line inside the small rectangle at the top of the data distribution graph is the mean of the population of the bias shown for that analyte in the matrix.



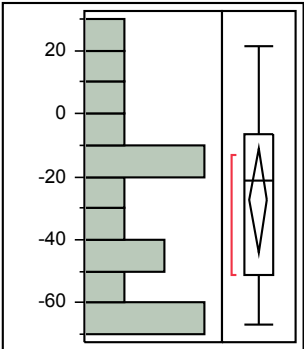
The box plots summarize the distribution of points for each analyte. The ends of the box are the 25th and 75th quantiles. The difference between the quartiles is the interquartile range. The line across the middle of the box identifies the median bias value. Each box has lines, sometimes called whiskers, which extend from each end. The whiskers extend from the ends of the small box to the outermost data point that falls within the distances computed. Any potential outliers are represented as small black dots.

The box plot of the bias data points and the mean visually illustrate the breadth of the distribution and where any potential outliers in the distribution might lie. The moments for the distribution plot are provided below the Bias plot. In some cases, N becomes very small and thus developed statistics may not accurately reflect estimates of the population if N were a significantly larger value.

GrF Distribution by Detection Method

Distributions Analyte_Detection=Gross alpha
Beta Counting - 2 pi gas flow proportional counter

Bias



Quantiles

100.0%	maximum	21.2
99.5%		21.2
97.5%		21.2
90.0%		19.82
75.0%	quartile	-6.7
50.0%	median	-21.1
25.0%	quartile	-51.1
10.0%		-66.4
2.5%		-66.7
0.5%		-66.7
0.0%	minimum	-66.7

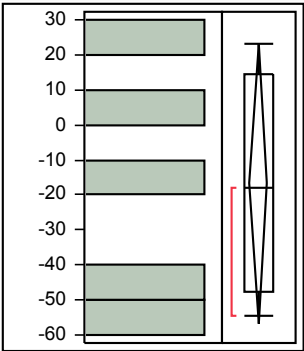
Summary Statistics

Mean	-27.45333
Std Dev	29.583631
Std Err Mean	7.6384607
Upper 95% Mean	-11.07046
Lower 95% Mean	-43.8362
N	15

GrF Distribution by Detection Method

Distributions Analyte_Detection=Gross alpha
Beta Counting - liquid scintillation counter

Bias



Quantiles

100.0%	maximum	23.2
99.5%		23.2
97.5%		23.2
90.0%		23.2
75.0%	quartile	14.4
50.0%	median	-17.8
25.0%	quartile	-47.55
10.0%		-54.4
2.5%		-54.4
0.5%		-54.4
0.0%	minimum	-54.4

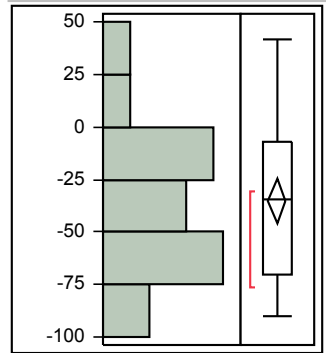
Summary Statistics

Mean	-16.82
Std Dev	31.967671
Std Err Mean	14.296377
Upper 95% Mean	22.873106
Lower 95% Mean	-56.51311
N	5

GrF Distribution by Detection Method

Distributions Analyte_Detection=Gross alpha Gross
Alpha/Beta - 2 pi gas flow proportional counter

Bias



Quantiles

100.0%	maximum	41.1
99.5%		41.1
97.5%		40.44
90.0%		15.92
75.0%	quartile	-7.25
50.0%	median	-34.4
25.0%	quartile	-70.5
10.0%		-77.58
2.5%		-90.055
0.5%		-90.1
0.0%	minimum	-90.1

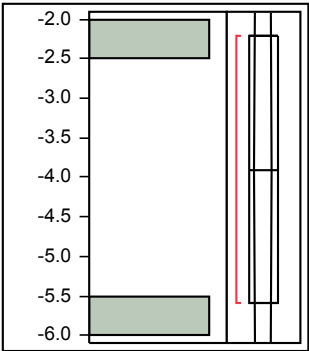
Summary Statistics

Mean	-35.28667
Std Dev	35.775141
Std Err Mean	5.3330432
Upper 95% Mean	-24.53862
Lower 95% Mean	-46.03471
N	45

GrF Distribution by Detection Method

Distributions
Analyte_Detection=Gross alpha Other

Bias



Quantiles

100.0%	maximum	-2.2
99.5%		-2.2
97.5%		-2.2
90.0%		-2.2
75.0%	quartile	-2.2
50.0%	median	-3.9
25.0%	quartile	-5.6
10.0%		-5.6
2.5%		-5.6
0.5%		-5.6
0.0%	minimum	-5.6

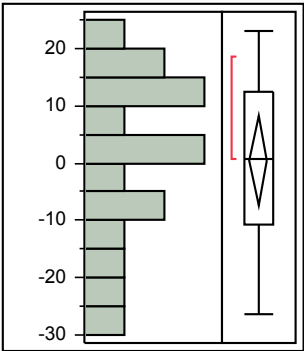
Summary Statistics

Mean	-3.9
Std Dev	2.4041631
Std Err Mean	1.7
Upper 95% Mean	17.700548
Lower 95% Mean	-25.50055
N	2

GrF Distribution by Detection Method

Distributions Analyte_Detection=Gross beta Beta
Counting - 2 pi gas flow proportional counter

Bias



Quantiles

100.0%	maximum	23
99.5%		23
97.5%		23
90.0%		19.48
75.0%	quartile	12.5
50.0%	median	0.6
25.0%	quartile	-10.6
10.0%		-24.86
2.5%		-26.3
0.5%		-26.3
0.0%	minimum	-26.3

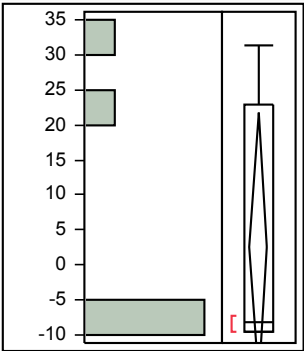
Summary Statistics

Mean	0.4294118
Std Dev	15.124019
Std Err Mean	3.6681134
Upper 95% Mean	8.2054649
Lower 95% Mean	-7.346641
N	17

GrF Distribution by Detection Method

Distributions Analyte_Detection=Gross beta
Beta Counting - liquid scintillation counter

Bias



Quantiles

100.0%	maximum	31.4
99.5%		31.4
97.5%		31.4
90.0%		31.4
75.0%	quartile	22.925
50.0%	median	-8.15
25.0%	quartile	-9.45
10.0%		-9.6
2.5%		-9.6
0.5%		-9.6
0.0%	minimum	-9.6

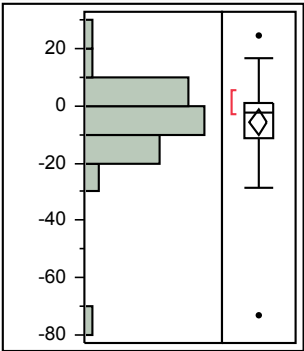
Summary Statistics

Mean	2.7
Std Dev	18.230743
Std Err Mean	7.4426698
Upper 95% Mean	21.831992
Lower 95% Mean	-16.43199
N	6

GrF Distribution by Detection Method

Distributions Analyte_Detection=Gross beta Gross
Alpha/Beta - 2 pi gas flow proportional counter

Bias



Quantiles

100.0%	maximum	24.4
99.5%		24.4
97.5%		23.245
90.0%		4.86
75.0%	quartile	0.95
50.0%	median	-2.2
25.0%	quartile	-11.55
10.0%		-19.2
2.5%		-66.37
0.5%		-73
0.0%	minimum	-73

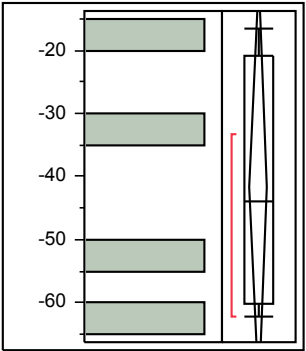
Summary Statistics

Mean	-5.686667
Std Dev	14.228326
Std Err Mean	2.1210337
Upper 95% Mean	-1.412004
Lower 95% Mean	-9.961329
N	45

GrF Distribution by Prep Method

**Distributions Analyte_Method=Gross alpha Acid
dissolution by strong Aqua Regia, hydrofluoric acid, etc.**

Bias



Quantiles

100.0%	maximum	-16.7
99.5%		-16.7
97.5%		-16.7
90.0%		-16.7
75.0%	quartile	-20.85
50.0%	median	-43.85
25.0%	quartile	-60.175
10.0%		-62.1
2.5%		-62.1
0.5%		-62.1
0.0%	minimum	-62.1

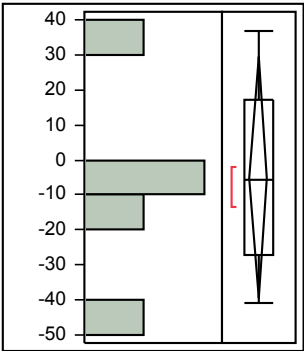
Summary Statistics

Mean	-41.625
Std Dev	20.599252
Std Err Mean	10.299626
Upper 95% Mean	-8.846994
Lower 95% Mean	-74.40301
N	4

GrF Distribution by Prep Method

Distributions Analyte_Method=Gross alpha
Acid leaching without hydrofluoric acid

Bias



Quantiles

100.0%	maximum	36.7
99.5%		36.7
97.5%		36.7
90.0%		36.7
75.0%	quartile	17.25
50.0%	median	-5.6
25.0%	quartile	-27.05
10.0%		-40.7
2.5%		-40.7
0.5%		-40.7
0.0%	minimum	-40.7

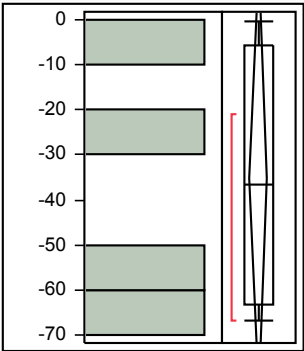
Summary Statistics

Mean	-5.04
Std Dev	27.803471
Std Err Mean	12.43409
Upper 95% Mean	29.482569
Lower 95% Mean	-39.56257
N	5

GrF Distribution by Prep Method

Distributions Analyte_Method=Gross alpha EPA 900,
Radioactivity, Gross Alpha/Beta Screening, 600/4-80-032

Bias



Quantiles

100.0%	maximum	-0.5
99.5%		-0.5
97.5%		-0.5
90.0%		-0.5
75.0%	quartile	-5.65
50.0%	median	-36.65
25.0%	quartile	-63.075
10.0%		-66.7
2.5%		-66.7
0.5%		-66.7
0.0%	minimum	-66.7

Summary Statistics

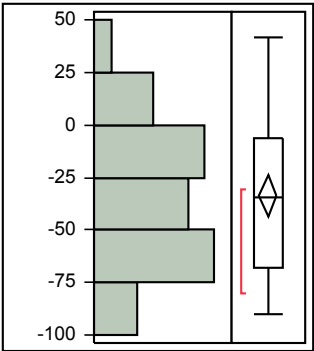
Mean	-35.125
Std Dev	29.911689
Std Err Mean	14.955845
Upper 95% Mean	12.471173
Lower 95% Mean	-82.72117
N	4

GrF Distribution by Prep Method

Distributions Analyte_Method=Gross alpha

No preparation - analyzed as received

Bias



Quantiles

100.0%	maximum	41.1
99.5%		41.1
97.5%		36.0625
90.0%		20.51
75.0%	quartile	-6.7
50.0%	median	-34.65
25.0%	quartile	-68.125
10.0%		-75.56
2.5%		-90.003
0.5%		-90.1
0.0%	minimum	-90.1

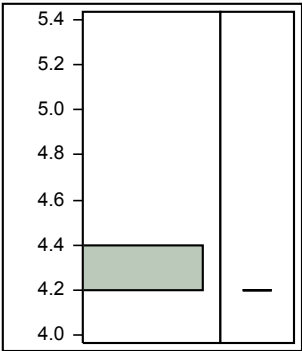
Summary Statistics

Mean	-33.57308
Std Dev	35.273103
Std Err Mean	4.8914993
Upper 95% Mean	-23.75298
Lower 95% Mean	-43.39317
N	52

GrF Distribution by Prep Method

Distributions
Analyte_Method=Gross alpha Other

Bias



Quantiles

100.0%	maximum	4.2
99.5%		4.2
97.5%		4.2
90.0%		4.2
75.0%	quartile	4.2
50.0%	median	4.2
25.0%	quartile	4.2
10.0%		4.2
2.5%		4.2
0.5%		4.2
0.0%	minimum	4.2

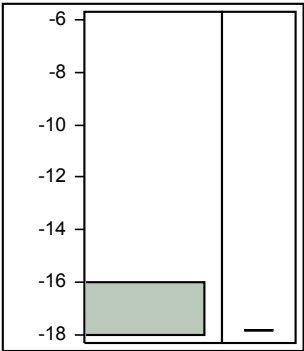
Summary Statistics

Mean	4.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1

GrF Distribution by Prep Method

Distributions Analyte_Method=Gross alpha Wet ash -
Acid digestion - the use of oxidizers to destroy organics

Bias



Quantiles

100.0%	maximum	-17.8
99.5%		-17.8
97.5%		-17.8
90.0%		-17.8
75.0%	quartile	-17.8
50.0%	median	-17.8
25.0%	quartile	-17.8
10.0%		-17.8
2.5%		-17.8
0.5%		-17.8
0.0%	minimum	-17.8

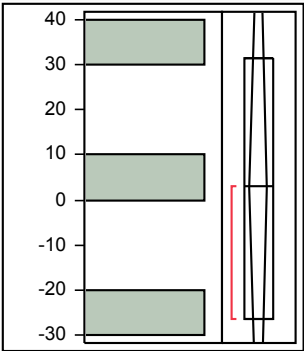
Summary Statistics

Mean	-17.8
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1

GrF Distribution by Prep Method

Distributions Analyte_Method=Gross beta Acid
dissolution by strong Aqua Regia, hydrofluoric acid, etc.

Bias



Quantiles

100.0%	maximum	31.4
99.5%		31.4
97.5%		31.4
90.0%		31.4
75.0%	quartile	31.4
50.0%	median	3.2
25.0%	quartile	-26.3
10.0%		-26.3
2.5%		-26.3
0.5%		-26.3
0.0%	minimum	-26.3

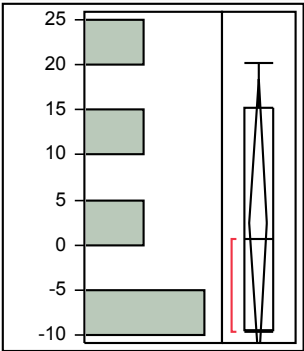
Summary Statistics

Mean	2.766667
Std Dev	28.852441
Std Err Mean	16.657964
Upper 95% Mean	74.440103
Lower 95% Mean	-68.90677
N	3

GrF Distribution by Prep Method

Distributions Analyte_Method=Gross beta
Acid leaching without hydrofluoric acid

Bias



Quantiles

100.0%	maximum	20.1
99.5%		20.1
97.5%		20.1
90.0%		20.1
75.0%	quartile	15.2
50.0%	median	0.6
25.0%	quartile	-9.5
10.0%		-9.6
2.5%		-9.6
0.5%		-9.6
0.0%	minimum	-9.6

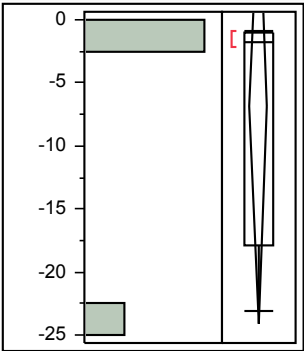
Summary Statistics

Mean	2.4
Std Dev	12.866429
Std Err Mean	5.7540421
Upper 95% Mean	18.375782
Lower 95% Mean	-13.57578
N	5

GrF Distribution by Prep Method

Distributions Analyte_Method=Gross beta EPA 900,
Radioactivity, Gross Alpha/Beta Screening, 600/4-80-032

Bias



Quantiles

100.0%	maximum	-0.9
99.5%		-0.9
97.5%		-0.9
90.0%		-0.9
75.0%	quartile	-1
50.0%	median	-1.75
25.0%	quartile	-17.875
10.0%		-23.1
2.5%		-23.1
0.5%		-23.1
0.0%	minimum	-23.1

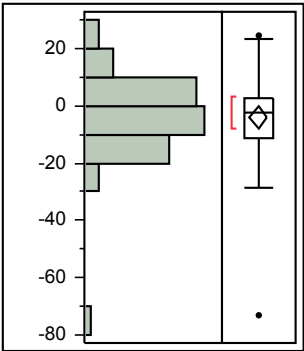
Summary Statistics

Mean	-6.875
Std Dev	10.83032
Std Err Mean	5.41516
Upper 95% Mean	10.358456
Lower 95% Mean	-24.10846
N	4

GrF Distribution by Prep Method

Distributions Analyte_Method=Gross beta
No preparation - analyzed as received

Bias



Quantiles

100.0%	maximum	24.4
99.5%		24.4
97.5%		23.875
90.0%		14.1
75.0%	quartile	2.75
50.0%	median	-2.4
25.0%	quartile	-11.225
10.0%		-19.2
2.5%		-56.425
0.5%		-73
0.0%	minimum	-73

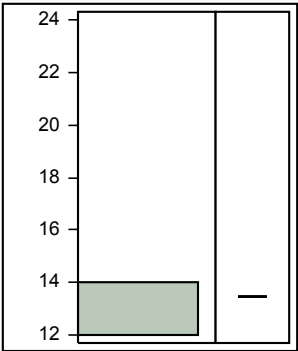
Summary Statistics

Mean	-4.242593
Std Dev	14.771883
Std Err Mean	2.0101987
Upper 95% Mean	-0.210645
Lower 95% Mean	-8.274541
N	54

GrF Distribution by Prep Method

Distributions
Analyte_Method=Gross beta Other

Bias



Quantiles

100.0%	maximum	13.5
99.5%		13.5
97.5%		13.5
90.0%		13.5
75.0%	quartile	13.5
50.0%	median	13.5
25.0%	quartile	13.5
10.0%		13.5
2.5%		13.5
0.5%		13.5
0.0%	minimum	13.5

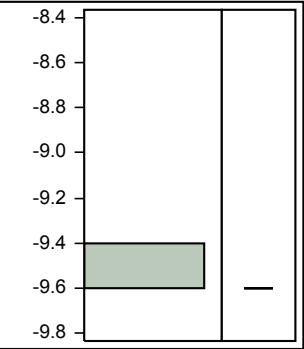
Summary Statistics

Mean	13.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1

GrF Distribution by Prep Method

Distributions Analyte_Method=Gross beta Wet ash - Acid digestion - the use of oxidizers to destroy organics

Bias



Quantiles

100.0%	maximum	-9.6
99.5%		-9.6
97.5%		-9.6
90.0%		-9.6
75.0%	quartile	-9.6
50.0%	median	-9.6
25.0%	quartile	-9.6
10.0%		-9.6
2.5%		-9.6
0.5%		-9.6
0.0%	minimum	-9.6

Summary Statistics

Mean	-9.6
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1